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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/099,659	03/15/2002	Jeffrey A. Tilton	25102A	2971

22889 7590 05/16/2007

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EXAMINER	
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ART UNIT	**PAPER NUMBER**
1771	
MAIL DATE	**DELIVERY MODE**
05/16/2007	PAPER

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/099,659
Filing Date: March 15, 2002
Appellant(s): TILTON, JEFFREY A.

Margaret S. Millikin
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed January 16, 2007 appealing from the Office action mailed May 18, 2006.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

US 5,851,355	Goettmann	12-1998
US 6,977,111	Yamaguchi et al.	12-2005

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

Claims 1, 5 – 7 and 9 – 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goettmann (US 5,851,355) as evidenced by Yamaguchi et al. (US 6,977,111).

It should be noted that this is not a new grounds of rejection and Yamaguchi et al. (US 6,977,111) is only being used as evidence. It should be noted that Yamaguchi et al. was introduced in the arguments section of the Final Office Action dated May 18, 2006 as an evidentiary reference to establish that N-720H fibers are sheath/core coPET/PET fibers.

Goettmann is directed to a nonwoven composite web useful as a support for a reverse osmosis membrane (column 1, lines 5 – 10).

As to claims 1 and 27, Goettmann teaches a composite material comprising polymeric staple fibers, a first fiber consisting of, at least in part, of a first thermoplastic binder material which melts at a temperature less than the melting temperature of the polymeric staple fibers, and a second binder fiber consisting of, at least in part, of a second thermoplastic binder material which melts at a second melting temperature less than the first melting temperature (column 2, lines 40 – 55). Goettmann teaches that the composite material comprises 5 to 40% by weight of a first polyester staple fiber, 0 to 60% by weight of a second polyester staple fiber, 15 to 50% by weight of a first thermoplastic binder fiber and 1 to 10% by weight of a second thermoplastic binder fiber (column 3, lines 55 – 68). Goettmann teaches that the first and second thermoplastic

binder fibers are sheath-core bicomponent fibers (column 2, lines 55 – 65). The Examiner equates the polymeric staple fibers to Appellant's "staple fibers", the first thermoplastic binder material to Appellant's "high melt bicomponent fibers" and the second thermoplastic binder material to Appellant's "low melt bicomponent fibers". Goettmann teaches that the first and second bicomponent binder fibers has a co-polyester sheath and a polyester core (column 2, lines 55 – 65). Goettmann teaches that N-720H fibers are binder fibers (column 4, lines 1 – 20). In US Patent 6,977,111 to Yamaguchi et al., Example 2 discusses the use of N720 polyester binder fibers having a sheath component of low melting point PET and a core component of PET which are manufactured by Kuraray Co., Ltd. (column 26, lines 1 – 10). According to US Patent 6,977,111, "low melting point PET" is a copolyester (column 10, lines 20 – 30). Therefore, Kuraray N720 fibers are concentric sheath/core CoPET/PET fibers.

As to claims 9, 12 and 13, Goettmann teaches that the staple fibers comprise polyester fibers (column 2, lines 55 – 60).

As to claims 14 - 15 and 17 - 18, Goettmann teaches that the first and second bicomponent binder fibers have a co-polyester sheath and a polyester core (column 2, lines 55 – 65). Goettmann teaches that N-720H fibers are binder fibers (column 4, lines 1 – 20). In US Patent 6,977,111 to Yamaguchi et al., Example 2 discusses the use of N720 polyester binder fibers having a sheath component of low melting point PET and a core component of PET which are manufactured by Kuraray Co., Ltd. (column 26, lines 1 – 10). According to US Patent 6,977,111, "low melting point PET" is a copolyester

(column 10, lines 20 – 30). Therefore, Kuraray N720 fibers are concentric sheath/core CoPET/PET fibers.

As to claims 16, 19 and 28, Goettmann teaches that the second thermoplastic binder fibers, or "low melt bicomponent fibers", have a co-polyester sheath that melts at 225°F (107.2°C) (column 2, lines 55 – 65). Goettmann teaches that the first thermoplastic binder fibers, or "high melt bicomponent fibers", have a co-polyester sheath that melts at 375°F (190.5°C) (column 2, lines 60 – 65).

As to claims 1, 5 and 27, Goettmann discloses the claimed invention except for that the average fiber diameter of the low melt bicomponent fiber, the high melt bicomponent fiber and staple fiber have a diameter between 18 – 22 microns as required by claim 1, the average diameter is between 18 – 30 microns as required by claim 27, the low melt bicomponent fiber is present in the amount of 20 – 60% by weight as required by claims 1 and 27 and that the density is between about 1.0 – 10 pcf as required by claims 5 and 27. It should be noted that the amount of low melt bicomponent fibers, fiber diameter and density are result effective variables. Goettmann teaches that variations and modifications of the composition may be devised and are within the scope and spirit of the invention. Goettmann teaches that it would be obvious to one of ordinary skill in the art that the range and blend of bicomponent fibers may be varied to effect the desired physical properties. Goettmann teaches that the physical properties (i.e., density) as well as the performance of the sheet material can be altered to fit a particular set of physical specifications (column 6, lines 18 – 43). Additionally, it is

known in the art to adjust the fiber diameter of the composition in order to adjust the properties of the composite. It should be noted that Goettmann positively requires that the staple fibers be within the range of 0.2 to 3.0 denier (column 3, lines 5 – 10). In the Remarks submitted on 5/28/05, the Appellant submits that the denier range of 0.2 – 3.0 denier is equivalent to a diameter of 4.5 – 17.6 microns, which touches Appellant's claimed range when rounded. It would have been obvious to one having ordinary skill in the art at the time the invention was made to create an insulating material that the average fiber diameter of the low melt bicomponent fiber, the high melt bicomponent fiber and staple fiber have a diameter between about 18 – 22 microns as required by claim 1, the average diameter is between 18 – 30 microns as required by claim 27, the low melt bicomponent fiber is present in the amount of 20 – 60% by weight as required by claims 1 and 27 and that the density is between about 1.0 – 10 pcf as required by claims 5 and 27, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In the present invention, one would have been motivated to optimize the average fiber diameter, percentage of low melting bicomponent fibers and density to create an insulating material with optimal strength and flexibility having the desired performance of the final product.

As to claims 5 – 7, 10 – 11 and 21 – 26, although Goettmann does not explicitly teach the claimed flexural strength of between about 40 – 1200 psi as required by claim 5, the material has the acoustical absorption coefficients as shown in claims 6, 10 and

21 - 26, the material has thermal conductivity value of between about 0.20 and 0.30 at 2 pcf density as required by claims 7 and 11, it is reasonable to presume that the claimed flexural strength of between about 40 – 1200 psi as required by claim 5, the material has the acoustical absorption coefficients as shown in claims 6 and 10, the material has thermal conductivity value of between about 0.20 and 0.30 at 2 pcf density as required by claims 7 and 11 and the acoustical absorption coefficients as shown in claims 21 – 26 is inherent to Goettmann. Support for said presumption is found in the use of like materials (i.e. a nonwoven material comprising polyester staple fibers and two types of polyester/copolyester bicomponent fibers in the desired proportions and fiber diameter ranges) which would result in the claimed property. The burden is upon the Appellant to prove otherwise. *In re Fitzgerald* 205 USPQ 594. In addition, the presently claimed property of flexural strength of between about 40 – 1200 psi as required by claim 5, the material has the acoustical absorption coefficients as shown in claims 6 and 10, the material has thermal conductivity value of between about 0.20 and 0.30 at 2 pcf density as required by claims 7 and 11 and the acoustical absorption coefficients as shown in claims 21 – 26 would obviously have been present once the Goettmann product is provided. Note *In re Best*, 195 USPQ at 433, footnote 4 (CCPA 1977).

As to claim 20, Goettmann discloses the claimed invention except for that the high melt bicomponent fiber can be substituted in part or whole by crystalline/semi-crystalline bicomponent fibers having a melt flow temperature of about 150 to about 180 degrees Celsius. It would have been obvious to one having ordinary skill in the art at

the time the invention was made to replace the high melt bicomponent fibers in part or in whole with crystalline/semi-crystalline bicomponent fibers since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of design choice. *In re Leshin*, 125 USPQ 416. Goettmann teaches that binder fibers different than those specified may be used, so long as the binder fiber contains thermoplastic material having a melting point lower than that of the polyester fibers and providing adequate bonding of those polyester fibers to form a non-woven web with a high tensile strength (column 6, lines 28 – 35). In the present invention, one would have been motivated to replace the high melt bicomponent fiber in part or whole with crystalline/semi-crystalline bicomponent fibers having a melt flow temperature of about 150 to about 180 degrees Celsius due to the desire to increase the range of applications of the composite material.

(10) Response to Argument

Appellant argues that Goettmann teaches a web comprising 1 – 10% by weight of the second thermoplastic binder material, equated to Appellant's "low melt bicomponent fiber", while Appellant requires 20 – 60% by weight of low melt bicomponent fiber. Although Goettmann teaches outside Appellant's claimed range, Goettmann specifically states that the range and blend of bicomponent fibers may be varied to effect desired physical properties (Goettmann, column 6, lines 35 – 40) as long as the sheet porosity is between 5 – 10 cfm (Goettmann, column 55 – 65). The Examiner has submitted that it would have been obvious to optimize the amount of low

melt bicomponent fibers. Absent any unexpected results for Appellant's claimed range, the Examiner submits that it is obvious to optimize the amount of bicomponent fibers to 20 – 60% by weight of the insulating material. The Appellant has not provided any evidence of unexpected results. The Appellant notes that an increase to 2 to 6 times as much bicomponent fibers is not encompassed by Goettmann's statement of varying the range and blend of bicomponent fibers. It should be noted that increasing the percentage of low melt bicomponent fibers would in turn decrease the percentage of other fibers. This does not imply a change in porosity only a change in composition of the web. Additionally, Appellant's arguments do not suffice as evidence.

Appellant argues that Appellant has claimed that the *average* fiber diameter of the low melt bicomponent, high melt bicomponent and staple fibers is between 18 – 22 microns. The Examiner has submitted the calculation of the diameter of the polyester staple fiber for the Appellant to demonstrate how close the polyester staple fiber diameter is to the claimed average fiber diameter but has relied on *In re Boesch* to support the argument that the average fiber diameter can be optimized to 18 – 22 microns. The Examiner has reviewed the submitted product literature for Kuraray EP-101 fibers and N-720H fibers which Appellant indicates that it suggests that the diameters of these fibers are substantially less than 17.6 microns. The Examiner has acknowledged that the Appellant is claiming the average fiber diameter and not individual fiber diameters. Based on Goettmann's statement that it is within the scope of the invention to modify various parameters based on desired physical properties (Goettmann, column 6, lines 20 – 45), the Examiner submits that the average fiber

diameter is optimizable based on the desired physical properties. If the Appellant submits that the claimed average fiber diameter range has unexpected results, the burden is upon the Appellant to demonstrate that the claimed ranges are not a matter of simple optimization. The Examiner has suggested to the Appellant to submit a 37 CFR 1.132 Declaration to establish unexpected results. In the Declaration, the Appellant should compare a sufficient number of tests both inside and outside the claimed range to show the criticality of the claimed range. *In re Hill*, 284 F.2d 955, 128 USPQ 197 (CCPA 1960) and must compare the claimed subject matter with the closest prior art to be effective to rebut a prima facie case of obviousness. Alternatively, the Appellant could submit evidence that the substrate of Goettmann cannot have an average fiber diameter of 18 – 22 microns and meet the required porosity of 5 – 10 cfm.

Appellant argues that there is no objective evidence to support that Kuraray EP-101 and N-720H fibers are sheath/core coPET (co-polyethylene terephthalate)/PET (polyethylene terephthalate) fibers. The Examiner agrees that EP-101 fibers do not appear to be bi-component fibers. However, the Examiner does supply objective and concrete evidence that N-720H fibers are sheath/core coPET (co-polyethylene terephthalate)/PET (polyethylene terephthalate) fibers. In US Patent 6,977,111, Example 2 discusses the use of N720 polyester binder fibers having a sheath component of low melting point PET and a core component of PET which are manufactured by Kuraray Co., Ltd. (column 26, lines 1 – 10). According to US Patent 6,977,111, "low melting point PET" is a copolyester (column 10, lines 20 – 30). Therefore, Kuraray N720 fibers are concentric sheath/core CoPET/PET fibers.

Appellant argues that the Examiner has not provided a prima face of obviousness because the prior art does not teach or suggest the claimed invention. The Examiner has discussed the contents of Goettmann above and how Goettmann discloses or renders obvious Appellant's claimed invention. The burden is upon the Appellant to establish unexpected results for the claimed percentage of low melt binder fibers and the average diameter and the Appellant has not provided evidence of unexpected results.

Appellant argues that the Examiner cannot presume that the claim features of claims 5 – 7, 10 – 11 and 21 – 26 are inherent based on use of like materials which would result in the claimed properties. The Examiner has discussed the contents of Goettmann above and how Goettmann discloses or renders obvious Appellant's claimed invention. The Examiner has met the required burden.

Appellant argues that substitution of crystalline/semi-crystalline bicomponent fibers is not supported *In re Leshin*. Although Leshin establishes that it is known in the art to select plastics to make containers based on the intended use of the container, the logic can be used similarly with the present rejection such that it is known to choose materials based on their suitability for a particular application (i.e. crystalline/semi-crystalline bicomponent fibers for use as melting bi-component fibers).

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Jennifer Chriss

Conferees:

Carol Chaney

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